

## RIPM 2002 Fleischer Progress Report

### **Regional Monitoring for Northeastern IPM**

CSREES Project Number: 2002-41530-01365

Period of Performance: 07/01/2002 – 06/30/2004

Submitted by **S. J. Fleischer**

Annual Progress Report for 07/01/2002 – 06/30/2003

This proposal advances the timely creation, management, delivery and utilization of pest monitoring information in the northeastern U.S. We proposed to establish a regional human and information technology infrastructure for organization and delivery of agricultural pest monitoring information in the northeastern IPM region using integrated GIS and Web (“web-mapping”) technology, using sweet corn as the model system. Specific objectives are to:

1. Establish and expand a human and georeferenced data infrastructure in the northeast, add spatial scaling and dynamic querying functionality to web-displayed maps of pest pressure with interfaces useful to growers today, and develop useful visualization methods to capture the 3 dimensions (x and y location, and time) of the information.
2. Incorporate pest phenology with the maps of pest pressure, and enable rapid reviews of both information themes.

To achieve this, we proposed a 3-step process, and we have made progress in all steps.

I. Build and expand the human infrastructure for the spatial database and working linkage across outreach units.

Previous efforts have coordinated with people working in 4 states (Maryland, Delaware, New Jersey and Pennsylvania), western New York, and the Eastern Shore of Virginia. Through this grant, we added sites in the Tidewater area of Virginia (working with Virginia Tech), Massachusetts and the Vermont / New Hampshire border (working with the University of Massachusetts) and Maine (working with the University of Maine).

We also established the dataflow linkages between outreach units. Specifically, we finished dataflow linkages between Extension in the College of Agriculture and the Environment Institute in the College of Earth and Mineral Sciences. This enabled the data which are collected via Active Server Pages software on College of Agriculture servers to populate MySQL databases and MacroMedia Flash applications on servers in the College of Earth and Mineral Sciences.

II. Redesign our web-mapping to support multiscaling and dynamic querying / visualization.

The redesigned website was running for the 2003 field season at [www.pestwatch.psu.edu](http://www.pestwatch.psu.edu). We embedded interactive hierarchical maps into the websites, enabling users to observe current and past conditions, and “drill down” to the point of interest. Maps are “clickable, enabling users to obtain time-series graphs - the catch over time at any site. Clicking on bars on the time-series graph will show the map for that time. Maps can be advanced over time to show temporal patterns via either a “play” button (to see the data as a mini-movie) or a via a timeline scale. Maps have pan and zoom capabilities. A unique feature is the ability to toggle specific trap-catch

## RIPM 2002 Fleischer Progress Report

categories, enabling users to view just the catch categories of interest (e.g., to see where all the catches above a given threshold are occurring). This tool is a Flash MacroMedia application that downloads all these capabilities for a given pest and year, thus making it reasonably fast for the user after a download. A “Choose Data Set” option results in a new pest-year dataset download.

### III. Build ECB phenology predictions and insert them into the web-mapping application

European corn borer phenology maps from both the Mid-Atlantic and Northeastern state were web-linked via a thermometer-shaped icon in the map tool. This degree-day model maps a life stage based on the most advanced life stage of the population, when at least 5% of the population reached that life stage. In other words, it maps where the “leading edge” of the ECB life stage exists, where leading edge is defined as 5% of the population entering that life stage.

#### Future Plans:

We have accomplished the primary web tools, but they need to be refined. Currently, there are 7 components to the webpage (intro, pest sheets, report formats of data, interactive mapping tool, data acquisition ASP page, and contacts). We intend to improve the organization and graphical interface. We are also investigating the potential of incorporation of wind trajectory information, if we can relate that to the corn earworm data. We hope to go beyond linking to the phenology maps by creating GIS overlays that integrate phonological predictions with trap-catch observations, and serving that via the hierarchical web-map tool.

Data acquisition was sporadic at times in 2003, with data flowing in at varying rates across the region. Significant organizational work will be invested in improving dataflow.

Outreach to Amish / Mennonite audiences via poster-insert methods at the vegetable auction houses was not accomplished in 2003, and we believe we can develop that for 2004. Focus group evaluations were not conducted, and we may need a no-cost extension to be able to accomplish them. A no-cost extension would also enable us to operate throughout the 2004 field season.